

# Metal Finishing Index to Volume 100

## January-December 2002

This index covers features and columns appearing in *Metal Finishing* during the calendar year 2002.

### SUBJECT INDEX

#### Acid Fumes

-from pickling, 11-12/02, p. 91

#### Additives

-and conducting polymers, modifying coatings to provide corrosion resistance with organic, 6/02, p. 104

-and inhibitors, modifying organic coatings to provide corrosion resistance with inorganic, 5/02, p. 42

-passivating, 5/02, p. 46; 6/02, p. 106

#### Adhesion Tests

-critical factors in preparing aluminum dollies for, 8/02, p. 15

-tape for, 8/02, p. 54

#### Air Pollution Control

-technical developments on in 2001, 2/02, p. 82

#### Airplane

-paint hangar, 10/02, p. 8

-when Murphy paints an, 3/02, p. 14

#### Aluminum

-anodize voltage for 7075, 3/02, p. 43

-bonding for high temperatures, 5/02, p. 73

-conductive black finish on, 11-12/02, p. 93

-dollies for adhesion tests, critical factors in preparing, 8/02, p. 15

-electropolishing, 9/02, p. 67

-heat-resistant shiny surface for cast, 2/02, p. 105

-optional matte black finish on, 3/02, p. 46

-plasma anodized, 11-12/02, p. 44

-plating for maximum conductive heat transfer, 3/02, p. 41

-Pylumin finishing for, 3/02, p. 47

-speckles on anodized, 11-12/02, p. 94

#### American Electroplaters and Surface Finishers Society (AESF), 1/02, p. 40

-a new society for finishers, 6/02, p. 8

-AESF Week 2002—Technology for Tough Times, 1/02, p. 40

-SURFIN 2002 technical program and exhibitors, 6/02, p. 20

#### Anodes

-corrosion of stainless steel, 10/02, p. 79

-for electrolytic cleaning, 10/02, p. 79

#### Anodizing

-a 2,000/2,000 coating, plasma, 11-12/02, p. 44

-cathodes for phosphoric acid, 6/02, p. 120

-crazing and cracks in, 11-12/02, p. 95

-its development, status, and future challenges, 11-12/02, p. 59

-long-term durability of rough, 11-12, p. 95

-or electroless nickel, 1/02, p. 68

-specifying a chiller for, 10/02, p. 79

-speckles on, 11-12/02, p. 94

-technical developments in 2001, 2/02, p. 16

-training, 9/02, p. 49

-voltage for 7075 aluminum, 3/02, p. 43

-what so you mean by hard, 11-12/02, p. 52

-with phosphoric acid, why it can't be reworked, 2/02, p. 109

#### April

-fools, 4/02, p. 86

#### Aqueous

-cleaning machines, 3/02, p. 51; 5/02, p. 54; 7/02, p. 27

-parts washing for Air Force maintenance operations, 3/02, p. 8

#### Automotive

-electrolytic derusting of sheet metal for-painting performance, paint robotics, 5/02, p. 8

-parts, bondable coating on composite, 5/02, p. 69

-parts, postplating treatment of, 5/02, p. 73

-sheet metal, electrolytic derusting of, 5/02, p. 69

-shock absorber rods, nodulation on, 5/02, p. 69

-under-hood hardware corrosion protection, 5/02, p. 68

-which phosphating for, 5/02, p. 69

#### Bar Codes

-usage of, 8/02, p. 42

#### Barium

-removal from chromic acid solution, 11-12/02, p. 90

#### Barrel Plating

-designing for, 10/02, p. 67

#### Biofiltration

for abatement of VOC and HAP emissions, 11-12/02, p. 12

#### Biological Cleaning

-equipment for, 10/02, p. 35

#### Black Finish

-on aluminum, conductive, 11-12/02, p. 93

#### Black Oxide

-must it be oiled, 2/02, p. 105

#### Blasting

-and shot peening, technical developments in 2001, 2/02, p. 11

-of hardened steel causing hydrogen embrittlement, 7/02, p. 42

-product showcase, 4/02, p. 28

-the paint remover of choice for the Air Force, plastic media, 7/02, p. 14

#### Brass

-how to finish, 7/02, p. 43

#### Bronze

-protective finish for phosphorus, 1/02, p. 69

-suitable metal plating for phosphor, 1/02, p. 70

#### Brush Plating

-an update on, 7/02, p. 18

#### Buffing

-technical developments in 2001, 2/02, p. 14

#### Cadmium

-contamination of chromate conversion coating, 10/02, p. 80

-technical developments in electrodeposition of in 2001, 2/02, p. 18

#### Castings

-oven-baked coatings that are applied to, 1/02, p. 65

#### Cataphoretic Painting

-cratering in on galvanized steel, 5/02, p. 71

#### Centrifuge

-design brings traditional process back to paint booth applications, 11-12/02, p. 40

#### Ceramic

-coating, plasma anodized aluminum, a 2,000/2,000, 11-12/02, p. 44

#### Chelates

-precipitation and treatment of, 11-12/02, p. 89

#### Chemistry

-for nonchemists, 5/02, p. 60; 6/02, p. 127; 7/02, p. 33

-in defense of, 7/02, p. 33

#### Chiller

-for anodizing, 10/02, p. 79

#### Chromate

-alternative for as separation layer for silver, 6/02, p. 125

-conversion coating contamination by cadmium, 10/02, p. 80

-conversion coating on a surface to be heated, 3/02, p. 44

-conversion coating or impregnation first, 11-12/02, p. 95

-conversion concerns, 3/02, p. 49

-conversion to trivalent, 5/02, p. 74

-emissions from spray booths, 5/02, p. 65

-new zinc plating systems, corrosion resistance without hexavalent, 5/02, p. 33

-replacement, tin-cobalt alloy coating as hexavalent, 5/02, p. 70

#### Chromium

-compositionally modulated multilayer application of trivalent, 2/02, p. 93

-electrowinning of, 6/02, p. 120

-new zinc plating systems, corrosion resistance without hexavalent, 5/02, p. 33

-plating adhesion standard, 6/02, p. 124

-plating salt spray hours, 6/02, p. 125

-plating titanium for lightweight engine, 5/02, p. 71

-red indicator for corrosion sites in hard, 8/02, p. 53

-technical developments in electrodeposition of in 2001, 2/02, p. 18

-versus stainless steel, 6/02, p. 119

#### Citric Acid

-test for, 8/02, p. 52

#### Cleaning

-anodes for electrolytic, 10/02, p. 79

-equipment for biological, 10/02, p. 35

-machines, aqueous, 3/02, p. 51; 5/02, p. 54; 7/02, p. 27

-methods for hot-dip galvanizing, 9/02, p. 23

-molybdenum, 9/02, p. 68

-spray guns, 3/02, p. 40

-spray guns under the aerospace NESHAP, 2/02, p. 110

-technical developments in 2001, 2/02, p. 8

-up on the Internet, 9/02, p. 52

#### Coating(s)

-barrier, 5/02, p. 42

-is it permissible to specify noncompliant, 1/02, p. 65

-porous castings, 1/02, p. 65

-to provide corrosion resistance, modifying organic, 1/02, p. 48; 5/02, p. 42; 6/02, p. 104

#### Cobalt

-technical developments in electrodeposition of in 2001, 2/02, p. 20

#### Coil Coating

-and blank coating, technical developments on in 2001, 2/02, p. 71

#### Composite Electrodeposits

- technical developments on in 2001, 2/02, p. 42
- Compounds
  - low vapor pressure, 11-12/02, p. 83
- Conducting Polymers
  - modifying coatings to provide corrosion resistance with, 6/02, p. 104
- Conversion Coating
  - concerns, chromate, 3/02, p. 49
  - definition of, 2/02, p. 110
  - of zinc, review of nonhexavalent chromium, 2/20, p. 99
  - on a surface to be heated, 3/02, p. 44
  - or impregnation first, 11-12/02, p. 95
  - technical developments on in 2001, 2/02, p. 40
- Conveyors
  - product showcase, 8/02, p. 20
- Copper
  - brightening, 9/02, p. 68
  - bus bars, silver plate versus tin plate on, 1/02, p. 73
  - side processes at gold cementation on nickel and, 1/02, p. 26
  - technical developments in electrodeposition of in 2001, 2/02, p. 22
  - technical developments in electroless deposition of in 2001, 2/02, p. 36
- Covering Power
  - a new test of determining throwing powder factor and, 8/02, p. 12
- Curing
  - technical developments on in 2001, 2/02, p. 75
  - ultraviolet/electron beam gains regulatory recognition, 2/02, p. 103
- Customer
  - satisfaction, 1/02, p. 58
- Deburring
  - small holes, 7/02, p. 40
- Defects
  - effect of the spraybooth on painting, 3/02, p. 38
  - orange peel, 3/02, p. 39
- Degreasing
  - of stainless steel 304, 9/02, p. 65; 11-12/02, p. 87
  - technical developments in 2001, 2/02, p. 8
- Deionized (DI) Water
  - factors affecting the quality of ultrapure, 8/02, p. 51
  - human consumption of, 10/02, p. 70 and p. 76
  - versus distilled, 10/02, p. 70
- Demulsification
  - of dissolved oil, 11-12/02, p. 87
- Descaling
  - technical developments in 2001, 2/02, p. 11
- Design
  - electrodialysis of electroless nickel process solutions, continuous versus batch treatment, 11-12/02, p. 30
  - crucial issues in, 10/02, p. 62
  - for finishing, 10/02, p. 63
- Diamond
  - dispersed electroless nickel coatings, 1/02, p. 45
- Dissolved Oil
  - demulsification of, 11-12/02, p. 87
- Drying
  - small diameter tubing, 10/02, p. 80
- Electrocoating
  - technical developments on in 2001, 2/02, p. 69
  - weight loss versus coating density as a measure of applied cost, 10/02, p. 53
- Electrodeposition
  - chronology of nickel, 4/02, p. 34
  - of osmium, 6/02, p. 84
  - technical developments in 2001, 2/02, p. 18
  - underlayers and multilayers, 4/02, p. 18
- Electrodialysis
  - of electroless nickel process solutions, continuous versus batch treatment designs, 11-12/02, p. 30
- Electroforming
  - technical developments on in 2001, 2/02, p. 42
- Electroless Copper
  - technical developments in 2001, 2/02, p. 36
- Electroless Gold
  - technical developments in 2001, 2/02, p. 38
- Electroless Nickel
  - continuous versus batch treatment designs for electroanalysis of, 11-12/02, p. 30
  - diamond dispersed, 1/02, p. 45
  - high corrosion-resistant and long-life-span, 3/02, p. 34
  - high/medium/low phosphorus, 1/02, p. 68
  - or anodize, 1/02, p. 68
  - technical developments in 2001, 2/02, p. 38
- Electroless Plating
  - technical developments in 2001, 2/02, p. 34
- Electron Beam
  - gains regulatory recognition, 2/02, p. 103
- Electronic
  - applications, emerging plating processes for advanced, 1/02, p. 18
- Electropolishing
  - aluminum, 9/02, p. 67
  - and electrochemical machining, technical developments in 2001, 2/02, p. 15
  - passivation, proper sequence, 3/02, p. 42
  - speeding up, 9/02, p. 66
- Etching
  - technical developments in 2001, 2/02, p. 11
- Evaporators
  - product showcase, 1/02, p. 22
- Filters
  - changing spray booth, 6/02, p. 115
  - metal finishing solution, 10/02, p. 14
  - product showcase, 2/02, p. 53
  - paint booth supply air, 5/02, p. 26
- FINISHING TECH 2002
  - preview of, 10/02, p. 21
- First Issue
  - Metal Finishing, 1/02, p. 37
- Flashlight
  - springs and contacts, corrosion-resistant plating for, 1/02, p. 70
- Galvanized Steel
  - preparing of for painting or powder coating, 9/02, p. 20
- Galvannealed Steel
  - cratering in cathaphoretic painting on, 5/02, p. 71
- Glass
  - bead blast residue, removal of, 9/02, p. 71
  - bead blasting of hardened steel causing hydrogen embrittlement, 7/02, p. 42
  - powder coating of, 7/02, p. 21
- Glycol Ethers
  - are they HAPs, 1/02, p. 65
- Gold
  - alloy and composite plating baths, electrokinetic behavior of, 4/02, p. 50
  - cementation on nickel and copper, 1/02, p. 26
  - pulse plating of in a barrel, 8/02, p. 33
  - recapturing, 11-12/02, p. 88
  - technical developments in electrodeposition of in 2001, 2/02, p. 23
  - technical developments in electroless deposition of in 2001, 2/02, p. 38
- Gun Bluing
  - of small objects, 10/02, p. 81
- Hangar
  - new corrosion control aircraft paint, 10/02, p. 8
- Hardcoat
  - crazing and cracks in, 11-12/02, p. 95
- Hardness
  - measuring coating, 2/02, p. 111
- Hazardous Air Pollutants (HAPs)
  - and VOCs for air/force dry paints, 9/02, p. 61
  - are glycol ethers HAPs, 1/02, p. 65
  - definition of, 11-12/02, p. 84
  - emissions, biofiltration for abatement of, 11-12/02, p. 12
  - information and terminology, 3/02, p. 55
- Heating and Cooling
  - product showcase, 11-12/02, p. 71
- High-Solids Coatings
  - technical developments on in 2001, 2/02, p. 70
- Hoists
  - product showcase, 8/02, p. 20
- Hot-Dip Coating
  - batch versus in-line continuous galvanizing, 7/02, p. 25
  - preparing for painting or powder coating, 9/02, p. 20
  - technical developments on in 2001, 2/02, p. 41
- Immersion Plating
  - technical developments on in 2001, 2/02, p. 40
- Impregnation
  - or chromate first, 11-12/02, p. 95
- Inconel
  - passivation of, 9/02, p. 67
- Industry
  - in transition, 3/02, p. 77
- Internet
  - cleaning up on the, 9/02, p. 52
- Kesternich Test
  - problems with, 8/02, p. 51
- Labeling
  - requirements for MSDS, 4/02, p. 83
- Lamps
  - for UV curing, 6/02, p. 92
- Laser
  - targeting tool for spray painting, 8/02, p. 34
- Lead
  - free electrodeposits, factors influencing the solderability of, 1/02, p. 10
  - in paint, 5/02, p. 63
- Magnesium
  - surface treatments for, 1/02, p. 69
- Manufacturers Safety Data Sheet (MSDS)
  - EPA method 24 and, 8/02, p. 49
  - getting more information than is on an, 4/02, p. 83
  - terminology, 3/02, p. 55
- Mass Finishing
  - challenged by your outside vendor, guidelines for specifying, 7/02, p. 8
  - technical developments in 2001, 2/02, p. 15
- Metal Finishing
  - the first issue, 1/02, p. 37
  - one hundredth year in publication, 4/02, p. 8
- Metal Fume Fever
  - symptoms of, 11-12/02, p. 87
- Metallization
  - of nonconductors, technical developments in electrodeposition of in 2001, 2/02, p. 34
- Microfinishing
  - and surface textures, 7/02, p. 10
- Miscellaneous Metal Parts and Products (MMPP)
  - complying with MMPP MACT, 2/02, p. 110

## Molybdenum

- cleaning, 9/02, p. 68
- National Electroplaters' Association of the United States and Canada
- new society for finishers, 6/02, p. 8
- Nickel
- ductile strike of, 1/02, p. 72
- electroplating chronology, 4/02, p. 34
- side processes at gold cementation on copper and, 1/02, p. 26
- technical developments in electrodeposition of in 2001, 2/02, p. 24
- technical developments in electroless deposition of in 2001, 2/02, p. 38
- understanding and troubleshooting decorative plating of, 2/02, p. 83; 6/02, p. 74; 10/02, p. 38
- Nickel-Phosphorus
- alloy plating, efficiency of, 1/02, p. 70
- One Hundredth Anniversary
- 100<sup>th</sup> year in publication, 4/02, p. 8
- the first issue, 1/02, p. 37
- Orange Peel
- defects, 3/02, p. 39
- Organic Coatings
- to provide corrosion resistance, 1/02, p. 48
- Osmium
- electrodeposition of, 6/02, p. 84
- Oxsol
- status of as exempt solvent, 2/02, p. 110
- Paint
- cans, are they hazardous, 7/02, p. 39
- VOCs and HAPs for air/force dry, 9/02, p. 61
- Painting
- an airplane, 3/02, p. 14
- operations, permits for, 3/02, p. 56
- Palladium
- technical developments in electrodeposition of in 2001, 2/02, p. 24
- Parachlorobenzotrifluoride (PCBTF)
- status of as exempt solvent, 2/02, p. 110
- Passivation
- electropolish, proper sequence, 3/02, p. 42
- of Inconel materials, 9/02, p. 67
- stainless steel, 9/02, p. 65
- Permit
- for painting operations, 3/02, p. 56
- what is a synthetic minor, 4/02, p. 84
- pH
- understanding, 5/02, p. 61
- Phosphating
- for automobile components, 5/02, p. 69
- for sliding pump parts, 11-12/02, p. 91
- one-step, no-rinse cleaning and, 4/02, p. 73
- Physical Vapor Deposition (PVD)
- technical developments in electrodeposition of in 2001, 2/02, p. 27
- Pickling
- bath pollutants, 11-12/02, p. 91
- tank construction, 10/02, p. 78
- technical developments in 2001, 2/02, p. 11
- Pigments
- inhibiting, 5/02, p. 46
- sacrificial, 5/02, p. 44
- Plasma
- anodized aluminum, 11-12/02, p. 44
- Plastic Media Blasting
- the paint remover of choice of the Air Force, 7/02, p. 14
- Platinum
- electroplating onto titanium, 1/02, p. 70
- technical developments in electrodeposition of in 2001, 2/02, p. 24

## Polishing

- circlips or jumplinks, 7/02, p. 43
- of punches, 7/02, p. 41
- steel bowl, 7/02, p. 44
- technical developments in 2001, 2/02, p. 14
- Powder Coating
- 2002, conference preview, 9/02, p. 39
- acceptable reject rates for, 8/02, p. 56
- of glass and similar substrates, 7/02, p. 21
- operations, smoke from, 7/02, p. 37
- or zinc dip, which is environmentally friendlier, 2/02, p. 109
- product showcase, 9/02, p. 39
- technical developments on in 2001, 2/02, p. 62
- peeling off of paint window frames, 5/02, p. 72
- Power Supplies
- product showcase, 3/02, p. 17
- Pretreatment
- hot-dip galvanized steel surfaces, 9/02, p. 20
- technical developments on in 2001, 2/02, p. 60
- wash primers, 5/02, p. 63
- washer, design and operation of an effective, 9/02, p. 26
- why some metals and alloys are more difficult than others, 9/02, p. 9; 11-12/02, p. 20
- Primers
- corrosion-inhibitive, 1/02, p. 65
- Product Showcase
- blasting, 4/02, p. 28
- conveyors/hoists, 8/02, p. 20
- evaporators, 1/02, p. 22
- filters, 2/02, p. 53
- heating and cooling, 11-12/02, p. 71
- powder coating, 9/02, p. 34
- power supplies, 3/02, p. 17
- thickness testers, 5/02, p. 22
- wastewater treatment chemicals, 7/02, p. 23
- zinc plating, 10/02, p. 27
- Pulse Plating
- a new approach to controlling metal deposition during, 8/02, p. 26
- of gold in a barrel, 8/02, p. 33
- of silver, 8/02, p. 14
- Purging
- zero HAPs waterborne formulation for paint line, 3/02, p. 29
- Quality
- zeroing in on, 9/02, p. 56
- Rack Plating
- designing for, 10/02, p. 69
- Radiometric Instruments
- and devices, 8/02, p. 10
- Radiation-Curable Coatings
- technical developments on in 2001, 2/02, p. 66
- Radiator
- fan motor shaft, finish for, 5/02, p. 68
- Resistivity
- measurement, vapor bubbles preventing, 6/02, p. 121
- Rhenium
- surface finishing of, 7/02, p. 41
- Rhodium
- plating problem, 1/02, p. 70
- Rinsing
- of parts, 1/02, p. 54
- static or constant overflow, 10/02, p. 80
- Robotics
- improving automotive paint performance, 5/02, p. 5
- Salt Spray
- correlation, 8/02, p. 53
- solution, how to analyze, 8/02, p. 52

- standards, what do they indicate, 8/02, p. 53
- Scams
- decoating and copper-iridium coins, 4/02, p. 86
- Selective Plating
- technical developments on in 2001, 2/02, p. 43
- Semiconductor
- wafer bumps, electrodeposition of, 1/02, p. 18
- Silver
- defense standard cancelled, 1/02, p. 68
- how to prevent it from the tarnishing impact of sulfur, 2/02, p. 105
- plate versus tin plate on copper bus bar, 1/02, p. 73
- pulse plating of, 8/02, p. 14
- technical developments in electrodeposition of in 2001, 2/02, p. 26
- Smog
- origin of the word, 8/02, p. 50
- Smoke
- from powder coating operations, 7/02, p. 37
- Sodium Carbonate
- removal of by freezing, 8/02, p. 54
- Solder
- reflow, strip plating with in-line, 5/02, p. 37
- Solderability
- of lead-free electrodeposits, 1/02, p. 10
- reel-to-reel, 1/02, p. 72
- Solvent(s)
- change from chlorinated, 9/02, p. 65
- concept of specific gravity of, 3/02, p. 55
- in coatings, true, 8/02, p. 50
- Specific Gravity
- of solvent, 3/02, p. 55
- Specifications
- surface finish, 7/02, p. 40
- Spray Booth(s)
- aircraft paint hangar, 10/02, p. 8
- effect of on painting defects, 3/02, p. 38
- filters, changing, 6/02, p. 115
- maintenance, 10/02, p. 47
- new generation of centrifuge design brings traditional process back to applications for, 11-12/02, p. 40
- particulate chromate emissions from, 5/02, p. 65
- retrofitting, 10/02, p. 61
- supply air filtration, 5/02, p. 26
- UL approval for, 8/02, p. 48
- Spray Guns
- a new tool for improving transfer efficiency of, 8/02, p. 34
- cleaning, 3/02, p. 40
- cleaning under the aerospace NESHAP, 2/02, p. 110
- Sputtering
- bias, 6/02, p. 126
- Stainless Steel
- advantages of 316L versus 304L, 2/02, p. 108
- anode corrosion, 10/02, p. 79
- bar polishing equipment, 10/02, p. 80
- castings are rusting, 9/02, p. 66
- degreasing of, 9/02, p. 65; 11-12/02, p. 87
- effect of brushing on hardness of, 7/02, p. 43
- galvanic corrosion between zinc and, 2/02, p. 107
- guidance for bright finishing of, 7/02, p. 41
- increasing the corrosion resistance of 304, 6/02, p. 119
- passivated outgassing problems on optics, 2/02, p. 107
- passivating, 9/02, p. 65
- preparation prior to annealing, 9/02, p. 70
- putting a logo on, 9/02, p. 71

- to circuit board in spa environment, 2/02, p. 108
- versus chromium, 6/02, p. 119
- Statistical Process Control (SPS)
  - what is it, 2/02, p. 112
- Steel
  - bowl polishing, 7/02, p. 44
  - cratering in cathaporetic painting on galvannealed, 5/02, p. 71
  - surface finish values for cold-rolled, 7/02, p. 41
- Strip Plating
  - technical developments on in 2001, 2/02, p. 43
  - with in-line solder reflow, 5/02, p. 37
- Stripping
  - metal, technical developments in 2001, 2/02, p. 12
  - paint, technical developments in 2001, 2/02, p. 79
  - plastic media blasting for, 7/02, p. 14
  - zero HAPs waterborne formulation for paint line purging and paint, 3/02, p. 29
- Synthetic Minor
  - permit, 4/02, p. 84
- Taguchi
  - for fun and profit, 3/02, p. 58
- Technical Developments
  - in 2001: inorganic "metallic" finishes, processes, and equipment, 2/02, p. 8
  - in 2001: organic coatings, processes, and equipment, 2/02, p. 60
- Testing
  - and control, technical developments on in 2001, 2/02, pp. 49 and 81
  - CASS, 8/02, p. 51
  - Knoop hardness, 7/02, p. 44
  - vapor bubbles preventing resistivity, 6/02, p. 121
- Thickness Testers
  - product showcase, 5/02, p. 22
- Thinning
  - instructions, understanding paint, 1/02, p. 67
- Throwing Power
  - factor, a new test for, 8/02, p. 12
  - of tin bath, improving, 1/02, p. 71
- Tin
  - defense standard cancelled, 1/02, p. 68
  - improving throwing power of, 1/02, p. 71
  - plate versus silver on copper bus bar, 1/02, p. 73
- Tin-Cobalt
  - alloy coating as hexavalent chrome replacement,

- 5/02, p. 70
- Titanium
  - chrome plating of for lightweight engine, 5/02, p. 71
  - phosphoric acid reaction products, removal of, 3/02, p. 41
  - problems with platinum electroplating onto, 1/02, p. 70
- Training
  - how to avoid a disaster, 9/02, p. 49
  - painters and supervisors pays off handsomely, 3/02, p. 38
- Transfer Efficiency
  - a new tool for improving spray gun, 8/02, p. 34
  - how does one calculate, 3/02, p. 56
- Triangles
  - as surface texture symbols, 2/02, p. 109
- Troubleshooting
  - and understanding decorative plating of nickel, 2/02, p. 83; 6/02, p. 74; 10/02, p. 38
- Ultraviolet
  - curing process, 4/02, p. 62; 6/02, p. 92; 8/02, p. 8
  - measurement and control, 8/02, p. 8
  - gains regulatory recognition, 2/02, p. 103
- Units
  - explanation of, 4/02, p. 83
- Valves
  - best coating for rust resistance for, 6/02, p. 119
- Vendor
  - challenged by your outside, 7/02, p. 8
- Ventilation
  - for large spray-painting operations, 3/02, p. 23
- Volatile Organic Compound(s) (VOCs)
  - analysis of by Method 24, 10/02, p. 59
  - and HAPs for air/force dry paints, 9/02, p. 61
  - compliant coatings, where to find, 1/02, p. 65
  - emissions, biofiltration for abatement of, 11-12/02, p. 12
  - exempt compounds, 2/02, p. 110
  - filtration and carbon system for abatement of, 10/02, p. 12
  - information and terminology, 3/02, pp. 55 and 56
  - latest version of EPA Method 24 for analysis of, 11-12/02, p. 83
  - selecting abatement devices for, 1/02, p. 66
- Volume Solids

- determining, 10/02, p. 59
- Wash Primers
  - pretreatment, 5/02, p. 63
- Washers
  - batch spray cabinet, 5/02, p. 54
  - belt conveyor, 7/02, p. 29
  - continuous spray, 5/02, p. 55
  - open-top spray, 5/02, p. 56
  - rotating drum, 7/02, p. 27
- Washing
  - for Air Force maintenance operations, 3/02, p. 8
- Waste Treatment
  - chemicals product showcase, 7/02, p. 23
  - EPA regulations for, 11-12/02, p. 90
  - one-step metal remover for, 11-12/02, p. 20
  - precipitation of chelates, 11-12/02, p. 89
  - technical developments on in 2001, 2/02, pp. 50 and 82
- Waterborne Coatings
  - rise to the occasion, new technologies meet today's market needs, 6/02, p. 112
  - technical developments on in 2001, 2/02, p. 66
  - VOC and HAP information for, 8/02, p. 48
- X-ray
  - photoelectron spectroscopy investigation of zinc-manganese corrosion products, 5/02, p. 14
- Zinc
  - an overview of nonhexavalent chromium conversion coating of, 2/02, p. 98
  - chromate exposed to ethanol, 2/02, p. 106
  - coatings on handrail tubing, a comparative analysis, 7/02, p. 25
  - dichromate for in-house finishing, alternative to, 2/02, p. 106
  - doesn't shine, inadequate mechanical finishing, 7/02, p. 40
  - galvanic corrosion between stainless steel and, 2/02, p. 107
  - plating for EMI grounding, 1/02, p. 74
  - plating product showcase, 10/02, p. 27
  - plating system without hexavalent chromium, 5/02, p. 33
  - technical developments in electrodeposition of in 2001, 2/02, p. 26
  - with yellow chromites, gold, 8/02, p. 56
- Zinc-Manganese
  - coating corrosion products, 5/02, p. 14; 6/02, p. 98

## AUTHOR INDEX

Assaf, Y.  
 -A New Test for Determining Throwing Power Factor and Improving Covering Power, 8/02, p. 12

Bailey, D.  
 -Electrodialysis of Electroless Nickel Process Solutions: Continuous Versus Batch Treatment Designs, 11-12/02, p. 30

Balow, S.A.  
 -One-Step Remover for Wastewater Treatment, 11-12/02, p. 8

Bannick, D.  
 -Powder Coating on Glass and Similar Substrates, 7/02, p. 21

Bardizeh, M.  
 -Factors Influencing the Solderability of Lead-Free Electrodeposits, 1/02, p. 10

Barton, T.A.  
 -Biofiltration for Abatement of VOC and HAP Emissions, 11-12/02, p. 12

Beatty, J.  
 -New Generation of Centrifuge Design Brings Traditional Process Back to Paint Booth Applications, 11-12/02, p. 40

Benaben, P.  
 -Electrochemical Study of a Trivalent Chromium Bath for Compositionally Modified Multilayer Application, 2/02, p. 92

Betchaver, M.  
 -Filtration of Metal-Finishing Solutions, 10/02, p. 14

Bibber, J.  
 -An Overview of Nonhexavalent Chromium Conversion Coatings—Part II: Zinc, 2/02, p. 98

Bogani, F.  
 -Electrokinetic Behavior of Gold Alloy and Composite Plating Baths, 4/02, p. 50

Boshkov, N.  
 -Corrosion Products of Zinc-Manganese

Coatings—Part II: Investigations Using X-ray Photoelectron Spectroscopy, 5/02, p. 14

-Corrosion Products of Zinc-Manganese Coatings—Part III: Double Protective Action of Manganese, 6/02, p. 98

Bozzini, B.  
 -Electrokinetic Behavior of Gold Alloy and Composite Plating Baths, 4/02, p. 50

Brace, A.W.  
 -Anodizing—Its Development, Status, and Future Challenges, 11-12/02, p. 59

Brooman, E.W.  
 -Modifying Organic Coatings to Provide Corrosion Resistance—Part I: Background and General Principles, 1/02, p. 49

-Modifying Organic Coatings to Provide Corrosion Resistance—Part II: Inorganic Additives and Inhibitors, 5/02, p. 42

-Modifying Organic Coatings to Provide Corrosion



- Resistance—Part III: Organic Additives and Conducting Polymers, 6/02, p. 104
- Brown, N.
- Factors Influencing the Solderability of Lead-Free Electrodeposits, 1/02, p. 10
- Carpenter, M.
- One-Step, No-Rinse Cleaning and Phosphating, 4/02, p. 73
- Carpenter, S.
- One-Step, No-Rinse Cleaning and Phosphating, 4/02, p. 73
- Cavallotti, P.L.
- Electrokinetic Behavior of Gold Alloy and Composite Plating Baths, 4/02, p. 50
- Chambers, B.
- Plastic Media Blasting: The Paint Remover of Choice for the Air Force, 7/02, p. 14
- Clark, L.
- Improving the Viability of Aqueous Parts Washing for Air Force Maintenance Operations, 3/02, p. 8
  - Plastic Media Blasting: The Paint Remover of Choice for the Air Force, 7/02, p. 14
- Crotty, D.
- Electrodialysis of Electroless Nickel Process Solutions: Continuous Versus Batch Treatment Designs, 11-12/02, p. 30
- Curham, B.
- One-Step Remover for Wastewater Treatment, 11-12/02, p. 8
- Davidson, D.
- Microfinishing and Surface Textures, 7/02, p. 10
- DiBari, G.A.
- Chronology of Nickel Plating, 4/02, p. 34
- Doyle, C.
- Factors Influencing the Solderability of Lead-Free Electrodeposits, 1/02, p. 10
- Duella, L.
- Paint Booth Supply Air Filtration, 5/02, p. 26
- Dunham, K.J.
- Preparing Hot-Dip Galvanized Surfaces for Painting or Powder Coating: A Primer, 9/02, p. 20
- Durkee, J.B.
- Cleaning Times*
- Aqueous Cleaning Machines—Part I, 3/02, p. 51
  - Aqueous Cleaning Machines—Part II, 5/02, p. 54
  - Aqueous Cleaning Machines—Part III, 7/02, p. 27
  - Cleaning Up on the Internet, 9/02, p. 52
  - Environmental Compliance, 11-12/02, p. 79
  - Rinsing of Parts, 1/02, p. 54
- Ellicks, D.
- Improving the Viability of Aqueous Parts Washing for Air Force Maintenance Operations, 3/02, p. 8
- Plastic Media Blasting: The Paint Remover of Choice for the Air Force, 7/02, p. 14
- Endregaard, E.A.
- Improving Automotive Painting Performance with Paint Robotics, 5/02, p. 8
- Fanigliulo, A.
- Electrokinetic Behavior of Gold Alloy and Composite Plating Baths, 4/02, p. 50
- Flott, L.W.
- Quality Control*
- Bar Codes, 8/02, p. 42
  - Chemistry for Non-Chemists—Part I, 5/02, p. 60
  - Chemistry for Non-Chemists—Part II, 6/02, p. 127
  - Chemistry for Non-Chemists—Part III: In Defense of Chemistry, 7/02, p. 33
  - Critical Design Issues, 10/02, p. 62
  - Customer Satisfaction, 1/02, p. 58
  - Industry in Transition, 4/02, p. 77
  - Taguchi for Fun and Profit, 3/02, p. 58
  - What Is SPC, 2/02, p. 112
  - Zeroing in on Quality, 9/02, p. 56
- Gabe, D.R.
- Hard Anodizing—What Do You Mean by Hard, 11-12/02, p. 52
- Underlayered and Multilayered Electrodeposits, 4/02, p. 18
- Gao, C.
- High Corrosion Resistant and Long-Life-Span Electroless Nickel Process, 3/02, p. 34
- Gamer, L.G.
- Biofiltration for Abatement of VOC and HAP Emissions, 11-12/02, p. 12
- Garrett, L.
- Plastic Media Blasting: The Paint Remover of Choice for the Air Force, 7/02, p. 14
- Geduld, H.
- Understanding and Troubleshooting Decorative Nickel Electroplating Systems—Part I: Introduction and Brightness Problems, 2/02, p. 83
  - Understanding and Troubleshooting Decorative Nickel Electroplating Systems—Part II: Poor Covering in Recesses, Low Ductility, and Poor Adhesion, 6/02, p. 74
  - Understanding and Troubleshooting Decorative Nickel Electroplating Systems—Part III: Roughness, Pitting, and Burnt Deposits, 10/02, p. 38
- Giovannelli, G.
- Electrokinetic Behavior of Gold Alloy and Composite Plating Baths, 4/02, p. 50
- Gladstein, M.
- A New Approach to Controlling Metal Deposition During the Pulse Plating Process, 8/02, p. 26
- Grubbs, C.A.
- Training—How to Avoid a Disaster, 9/02, p. 49
- Guterman, H.
- A New Approach to Controlling Metal Deposition During the Pulse Plating Process, 8/02, p. 26
- Hadley,
- Corrosion Resistance without Hexavalent Chromium—New Zinc Plating Systems, 5/02, p. 33
- Haydu, J.
- Equipment for Biological Cleaning, 10/02, p. 35
- Hoch, R.
- Plastic Media Blasting: The Paint Remover of Choice for the Air Force, 7/02, p. 14
- Jones, T.
- Electrodeposition of Osmium, 6/02, p. 84
- Joseph, R.
- New Corrosion Control Aircraft Paint Hangar, 10/02, p. 8
- Training Painters and Supervisors Pays Off Handsomely, 3/02, p. 38
- Environmental Coating Problems*
- Changing Spray Booth Filters, 6/02, p. 115
  - Coating Porous Castings, Selecting Abatement Devices, and Understanding Paint Thinning Instruction, 1/02, p. 65
  - Determining Volume Solids, Control Standards, and Retrofitting Spray Booths, 10/02, p. 59
  - Labeling Requirements and Synthetic Minor Air Permits, 4/02, p. 83
  - Lead in Paint, Wash Primers, and Calculating Particulate Emissions from Spray Booths, 5/02, p. 63
  - MSDS, VOC, and HAP Information and Terminology; and Calculating Transfer Efficiency, 3/02, p. 55
  - Smoke from Powder Coating Operations: and Open Paint Cans, 7/02, p. 37
  - UL Approval for Spray Booths; VOC and HAP for Waterbornes; and "True" Solvents, 8/02, p. 48
  - VOC Analysis, Low Vapor Pressure Compounds, and HAPs, 11-12/02, p. 83
  - VOC-Exempt Compounds, Conversion Coatings, and Pencil Hardness, 2/02, p. 110
  - VOCs and HAPs for Air/Force Dry Paints, 9/02, p. 61
- Kalunzy, K.
- Why Some Metals and Alloys Are More Difficult to Pretreat than Others—Part I, 9/02, p. 9
  - Why Some Metals and Alloys Are More Difficult to Pretreat than Others—Part II, 11-12/02, p. 20
- Klein, R.J.
- A New Tool for Improving Spray Gun Transfer Efficiency, 8/02, p. 34
- Knipe, R.E.
- Zero HAPs Waterborne Formulation for Paint Line Purging and Paint Stripping, 3/02, p. 29
- Kubernach, K.
- Ceramic Coating for an Aircraft, 3/02, p. 14
- Kuhn, A.
- Plasma Anodized Aluminum—A 2000/2000 Ceramic Coating, 11-12/02, p. 44
- Liu, R.
- High Corrosion Resistance and Long-Life-Span Electroless Nickel Process, 3/02, p. 34
- Loof, R.
- Ultraviolet/Electron Beam Gains Regulatory Recognition, 2/02, p. 103
- Mandich, N.V.
- Understanding and Troubleshooting Decorative Nickel Electroplating Systems—Part I: Introduction and Brightness Problems, 2/02, p. 83
  - Understanding and Troubleshooting Decorative Nickel Electroplating Systems—Part II: Poor Covering in Recesses, Low Ductility, and Poor Adhesion, 6/02, p. 74
  - Understanding and Troubleshooting Decorative Nickel Electroplating Systems—Part III: Roughness, Pitting, and Burnt Deposits, 10/02, p. 38
- Martini, C.
- Electrokinetic Behavior of Gold Alloy and Composite Plating Baths, 4/02, p. 50
- McElroy, B.
- Waterborne Coatings Rise to the Occasion: New Technologies Meet Today's Market Needs, 6/02, p. 112
- McKenna, C.
- Improving the Viability of Aqueous Parts Washing for Air Force Maintenance Operations, 3/02, p. 8
- McPhail, H.
- Paint Booth Supply Air Filtration, 5/02, p. 26
- Middendorf, L.
- Paint Booth Maintenance, 10/02, p. 47
- Miles, R.

-Improving the Viability of Aqueous Parts Washing for Air Force Maintenance Operations, 3/02, p. 8

-Plastic Media Blasting: The Paint Remover of Choice for the Air Force, 7/02, p. 14

Mooney, T.  
*Heard on the Hotline*  
 -1/02, p. 68; 2/02, p. 105; 3/02, p. 41; 4/02, p. 86; 5/02, p. 68; 6/02, p. 119; 7/02, p. 40; 8/02, p. 51; 9/02, p. 65; 10/02, p. 70; 11-12/02, p. 87

Murphy, M.  
 -A New Society for Finishers, 6/02, p. 8  
 -One Hundredth Year in Publication, 4/02, p. 8  
 -Technical Developments in 2001: Inorganic "Metallic" Finishes, Processes, and Equipment, 2/02, p. 8  
 -Technical Developments in 2001: Organic Coatings, Processes, and Equipment, 2/02, p. 60  
 -The First Issue, 1/02 p. 37

Neale, D.  
 -Improving the Viability of Aqueous Parts Washing for Air Force Maintenance Operations, 3/02, p. 8

Nemaska, S.  
 -Corrosion Products of Zinc-Manganese Coatings—Part II: Investigations Using X-ray Photoelectron Spectroscopy, 5/02, p. 14

Norman, M.  
 -Equipment for Biological Cleaning, 10/02, p. 35

O'Grady, J.  
 -Corrosion Resistance without Hexavalent Chromium—New Zinc Plating Systems, 5/02, p. 33

Petrov, K.  
 -Corrosion Products of Zinc-Manganese Coatings—Part III: Double Protective Action of Manganese, 6/02, p. 98

Poznyak, S.K.  
 -Side Processes at Gold Cementation on Nickel and Copper, 1/02, p. 26

Pushpavanam, M.  
 -Diamond-Dispersed Electroless Nickel Coatings, 1/02, p. 45

Rahrig, P.G.  
 -Zinc Coatings on Handrail Tubing: A Comparative Analysis, 7/02, p. 25

Reamon, D.  
 -Paint Booth Supply Air Filtration, 5/02, p. 26

Rimskaya, A.A.  
 -Side Processes at Gold Cementation on Nickel and Copper, 1/02, p. 26

Rousseau, A.  
 -Electrochemical Study of a Trivalent Chromium Bath for Compositionally Modified Multilayer Application, 2/02, p. 92

Ruble, D.  
 -Weight Loss Versus Coating Density as a Measure of Applied Coating Cost, 10/02, p. 53

Schetty, R.  
 -Emerging Plating Processes for Advanced Electronic Applications, 1/02, p. 18

Shannon, K.  
 Critical Factors in Preparing Aluminum Dollies for Adhesion Tests, 8/02, p. 15

Sheela, G.  
 -Diamond-Dispersed Electroless Nickel Coatings, 1/02, p. 45

Stoener, S.

-Design and Operation of an Effective Pretreatment Washer, 9/02, p. 26

Stowe, R.W.  
 -Key Factors in the UV Curing Process—The Relationship of Exposure Conditions and Measurement in UV Process Design and Process Control: Part I: Introduction, 4/02, p. 62  
 -Key Factors in the UV Curing Process—The Relationship of Exposure Conditions and Measurement in UV Process Design and Process Control: Part II: Lamp Systems, 6/02, p. 92  
 -Key Factors in the UV Curing Process—The Relationship of Exposure Conditions and Measurement in UV Process Design and Process Control: Part III: UV Measurement and Control, 8/02, p. 8

Stewart, D.R.  
 -Strip Plating with In-Line Reflow, 5/02, p. 37

Sviridov, V.V.  
 -Side Processes at Gold Cementation on Nickel and Copper, 1/02, p. 26

Thede, M.  
 -Strip Plating with In-Line Reflow, 5/02, p. 37

Vanek, D.  
 -An Update on Brush Plating, 7/02, p. 18

Verbeke, W.  
 -Corrosion Resistance without Hexavalent Chromium—New Zinc Plating Systems, 5/02, p. 33

Vitkova, S.  
 -Corrosion Products of Zinc-Manganese Coatings—Part II: Investigations Using X-ray Photoelectron Spectroscopy, 5/02, p. 14  
 -Corrosion Products of Zinc-Manganese Coatings—Part III: Double Protective Action of Manganese, 6/02, p. 98

Vorobyova, T.N.  
 -Side Processes at Gold Cementation on Nickel and Copper, 1/02, p. 26

Walz, J.  
 -Selecting Cartridge Filters for Powder Coating Operations, 10/02, p. 31

Wander, J.D.  
 -Cost-Effective Ventilation for Large Spray-Painting Operations, 3/02, p. 23

Ward, G.  
 -Challenged By Your Outside Vendor, 7/02, p. 8

Wilcox, G.D.  
 -Underlayered and Multilayered Electrodeposits, 4/02, p. 18

Wing, L.  
 -Corrosion Resistance without Hexavalent Chromium—New Zinc Plating Systems, 5/02, p. 33

Yang, J.  
 -High Corrosion Resistant and Long-Life-Span Electroless Nickel Process, 3/02, p. 34

# U.S. POSTAL SERVICE STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Required by 39 U.S.C. 3685)

- Title of Publication: Metal Finishing
- Publication No. 342-180
- Date of Filing: October 1, 2002
- Frequency of Issue: monthly, except semi-monthly in January and May
- No. of Issues Published Annually: 14
- Annual Subscription Price: \$78.00
- Location of Known Office of Publication: Elsevier Science Inc., 360 Park Ave. South, New York, NY 10010
- Location of the Headquarters or General Business Office of the Publishers (not printers): Elsevier Science Inc., 360 Park Ave. South, New York, NY 10010
- Names and addresses of Publisher, Editor, and Managing Editor: (Publisher) Eugene B. Nadel, Metal Finishing, 360 Park Ave. South, New York, NY 10010. (Editor) Michael Murphy, Metal Finishing, 360 Park Ave. South, New York, NY 10010. (Managing Editor) None.
- Owner. (If owned by a corporation its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm its name and address as well as that of each individual must be given.) Elsevier Science Inc., 360 Park Ave. South, New York, NY 10010. Wholly-owned subsidiary of Reed Elsevier U.S. Holdings, Inc., 4520 East-West Highway, Suite 800, Bethesda, MD 20814.
- Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities: None.
- Does not apply.
- Publication Name: Metal Finishing
- Issue Date for Circulation Data Below: Vol. 100, #10 October 2002
- Extent and Nature of Circulation:

	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
A. Total No. Copies (Net Press Run)	16,225	17,453
B. Paid and/or Requested Circulation		
1. Paid/Requested Outside Country Mail Subscriptions Stated on Form J541	16,225	17,453
2. Paid In-Country/Subscriptions Stated on Form 3541		
3. Sales Through Dealers and Carriers, Street Vendors, Counter Sales and Other Non-USPS Paid Distribution	None	None
4. Other Classes Mailed Through the USPS	None	None
C. Total Paid and/or Requested	16,225	17,453
D. Free Distribution by Mail		
1. Outside Country as Stated on Form 3541	5173	4236
2. In-Country as Stated on Form 3541	None	None
3. Other Classes Mailed Through the USPS	None	None
E. Free Distribution Outside the Mail	570	500
F. Total Free Distribution	570	4736
G. Total Distribution	21,967	22,189
H. Copies Not Distributed	1272	707
I. TOTAL (Sum of 15g and h)	23,240	22,896
J. Percent Paid and/or Requested Circulation (15c + 15g x 100)	73.86%	78.66%

I certify that the statements made by me above are correct and complete.

*Carole Ireland*

Carole Ireland, Circulation Director

